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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/563,808	01/09/2006	William Lindsay	H310717PCTUS	5329

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EXAMINER

VO, HIEN XUAN

ART UNIT PAPER NUMBER

2863

DATE MAILED: 09/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/563,808	Applicant(s) LINDSAY ET AL.	
	Examiner Hien X. Vo	Art Unit 2863	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 January 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☒ Claim(s) 10, 11 and 18 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 January 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>01/09/06</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement (IDS) submitted on 01/09/06. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Claim Objections

2. Claims 10-11 objected to because of the following informalities: double words "the said" are in the sentence. Appropriate correction is required.
3. Claims 18 objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim should refer to other claims in the alternative only. See MPEP § 608.01(n). Accordingly, the claim has not been further treated on the merits.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Art Unit: 2863

4. Claims 1, 19 rejected under 35 U.S.C. 102(b) as being anticipated by Hussein (U.S. Patent No. 5,210,704).

With respect to claims 1 and 19, Hussein discloses a system for prognosis and diagnostics of failure and wearout monitoring and for prediction of line expectancy of helicopter gearboxes and other rotating equipment including a method for predicting maintenance requirements in rotating equipment normally operating in loaded and unloaded conditions (see e.g. col. 1, lines 9-25), the method including the following steps; coupling a sensor to apparatus associated with said rotating equipment (see e.g. Fig. 1, 102 and col. 15, lines 60-68), said sensor being responsive to vibration in said apparatus to generate an electric signal (see e.g. col. 16, lines 12-16); obtaining a load signal from apparatus associated with said rotating equipment which is indicative of whether the rotating equipment is loaded (see e.g. Fig. 17, step 929); sampling said electric signal when the rotating equipment is loaded over a predetermined sampling time interval to obtain a loaded electric signal (see e.g. Fig. 3); sampling said electric signal when the rotating equipment is unloaded over a predetermined sampling time interval to obtain an unloaded electric signal (see e.g. Fig. 22 and col. 23, lines 66-68 and col. 24, lines 1-19); and periodically displaying the relative magnitude between said loaded electric signal and said unloaded electric signal over an extended maintenance period of time (see e.g. col. 22, lines 23-32), a maintenance inspection being required when the magnitude of the unloaded electric signal exceeds the magnitude of the loaded electric signal (see e.g. col. 24).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 2-18 rejected under 35 U.S.C. 103(a) as being unpatentable over Hussein (U.S. Patent No. 5,210,704) further in view of Choe et al. (U.S. Patent No. 6,694,285).

With respect to claim 2-18, Hussein discloses the invention as claimed, an alert signal corresponding to the arithmetic ratio R between electric readings corresponding is generated and displayed visually (see e.g. col. 19, lines 9-13), the slope of the plot is monitored (see e.g. Fig. 18), except for teaching the sensor is selected from the group comprising a velocimeter, an accelerometer and a piezoelectric crystal, the electric signal generated is either current or voltage, the predetermined vibration frequency range during which the electric signal is sampled is 0 to 150 Hz for rotating equipment rotating at less than 100 revolutions per minute, the predetermined vibration frequency range during which the electric signal is sampled is 0 to 200 Hz for rotating equipment rotating at up to 700 revolutions per minute, the predetermined vibration frequency range during which the electric signal is sampled is 0 to 500 Hz for rotating equipment rotating at more than 1000 revolutions per minute, the loaded electric signal is sampled over a time interval of 10 seconds during which the rotating equipment is fully loaded, the unloaded electric signal is sampled over a time interval of 10 seconds during which the rotating

Art Unit: 2863

equipment is unloaded, sampling of the unloaded electric signal begins a predetermined period of time after the load signal indicates that the rotating equipment is not loaded, the loaded and unloaded electric signals correspond to the maximum electric readings taken during said predetermined sampling time interval, electric readings corresponding to the loaded and unloaded electric signals are averaged during said predetermined sampling time interval to generate an average electric signal, a daily average of the arithmetic ratio R is plotted over time, the natural logarithmic of the ratio R is plotted over time,

Choe et al. disclose method and apparatus for monitoring rotating machine including an accelerometer (see e.g. col. 9, lines 27-28), a piezoelectric crystal (see e.g. col. 9, line 28), the electric signal generated is either current or voltage (see e.g. col. 1, line 60), the accelerometer has a frequency response from 0.1Hz up to 10,000Hz, and load samples per revolution (see e.g. Fig. 19), electric readings corresponding to the loaded and unloaded electric signals are averaged during said predetermined sampling time interval to generate an average electric signal (see e.g. col. 16), a daily average of the arithmetic ratio R is plotted over time, the natural logarithmic of the ratio R is plotted over time (see e.g. Fig. 13).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Hussein with an accelerometer, a piezoelectric crystal, the electric signal generated is either current or voltage, the frequency response of the sensor, the plot of the electric signal as taught by Choe et al. in order to provide an easy and effective method for developing accurate measure the electric signal of the

Art Unit: 2863

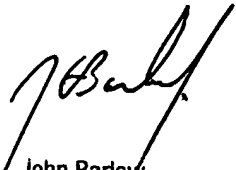
rotating equipment into account affect to load or unload of the machine, that would have improved the vibration analysis. Also, the frequency response of the accelerometer from 0.1Hz up to 10,000Hz that is still in the frequency range as claimed in the present application.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hien X. Vo whose telephone number is (571) 272-2282. The examiner can normally be reached on M-F (8:00-5:30) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached on (571) 272-2269. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Hien Vo
09/17/06


John Barlow
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